

TECHNOLOGY

EDUCATIONAL SPACES

Printing Instructions

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 2. Print each document section that you are interested in.
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TECHNOLOGY EDUCATION

GENERAL PROGRAM GOALS AND OBJECTIVES STATEMENT

- ☐ Technology Education teaches students to understand, use and control technology. The student will learn the development of technology and its effect on people, the environment and society. Students learn how to adapt to change, to deal with forces that influence their future and to participate in controlling their future. The students will develop insights into the application of technology concepts, processes and systems. They are prepared to be active participants in controlling their future.

- ☐ Technology Education will provide fundamental skills through:
 - A) Tools of performance associated with areas of human endeavor, inquiry, problem solving, learning to learn, reading, communicating, calculating, analyzing, manipulative skills, planning, designing and many more.
 - B) Effective participation in and pursuit of the selected career path when studying beyond the exploration level.
 - C) Manipulative and cognitive exploration through planning, designing, constructing, problem solving and decision making.

PROGRAM ACTIVITIES

- ☐ Video production
- ☐ Computer Graphics, Silk Screening, Vinyl Printing & Transfers

- ☐ Digital Imaging
- ☐ Concrete Work
- ☐ Wiring/Electronics
- ☐ Blueprint Reading
- ☐ Hand tool Use
- ☐ Wind Tunnel Testing
- ☐ Using Pneumatics and compressed air
- ☐ Small engine mechanics
- ☐ Safety Lessons
- ☐ CADD
- ☐ Board drafting
- ☐ Materials processing (woods, metals, plastics)
- ☐ Building Prototypes:
Energy, aviation, aero space, transportation, rockets, solar energy, laser
optics, and alternate energy fuels.
- ☐ Skits
- ☐ Team working skills
- ☐ Career studies/research
- ☐ Research and design
- ☐ Radio/TV Communications
- ☐ Robotics
- ☐ Fabrication/welding
- ☐ Desktop Publishing
- ☐ Small business simulations

AREAS

DESCRIPTION	EST. STAFF	EST. STUDENTS	SQ. FT. TOTAL
Storage (Materials)			200-500
Storage (projects)			300-500
Storage (tools)			250-500
Classroom/clean lab	1-2	16-24	2000
"Dirty" Lab	1-2	16-24	2000-3000
Restrooms/Clean Up Area			200
Offices	1-2	1-2	120
Paint/Finish Room	2-4	2-4	150-400
Video Lab/Broadcasting	1-2	4-6	200-500
Darkroom	1-2	4-6	100-200
Welding/Gas (outside storage)			
Construction yard	1-2	6-10	

INTERNAL/EXTERNAL RELATIONSHIPS - WHAT SHOULD BE NEAR THIS AREA

- ☐ The classroom should be near the lab and office.
- ☐ The storage area should be near the classroom and the lab.
- ☐ The material storage area needs to be near an outside delivery area.
- ☐ A cleanup area and restrooms should be near the lab.
- ☐ The video production area should be near the classroom or "clean area."
- ☐ Any outside storage should be close to the lab.
- ☐ These classes should be near other noisy classes.

INTERNAL/EXTERNAL RELATIONSHIPS - WHAT SHOULD **NOT** BE NEAR THIS AREA

- ☐ These classes should not be near any quiet areas.

UTILITIES

Plumbing:

- ☐ Plumbing should be positioned or dampened to minimize noise.
- ☐ In the cleanup area a gang sink should be provided.
- ☐ A drinking fountain should be plumbed in the lab, away from machinery.
- ☐ An eye wash and emergency shower should be located in the lab.
- ☐ Drains will need to be provided in the cleanup area.
- ☐ Multiple compressed air outlets should be plumbed to the perimeter of the lab and classroom and in the outside area.
- ☐ Consider natural gas plumbed to the foundry if needed.
- ☐ Welding gas should be piped from the source to stations in the lab.
- ☐ Outside water should be plumbed near the lab door.

HVAC:

- ☐ The heating, ventilation, and air-conditioning system needs to be of sufficient size to keep each instructional space at a comfortable temperature.
- ☐ The system needs to have a fresh air exchange system to keep high air quality in each instructional space.
- ☐ The general classroom supply and exhaust ducts need to be positioned to minimize any draftiness in the room.

- ☐ The HVAC controls need to be designed to allow individuals the ability to modify the classroom temperature for the instructional requirements of the classroom activities.
- ☐ The controls need to be positioned so that the room temperature is not “misread” (e.g., not too close to a door, window, or vent).
- ☐ A dust collection and particulate filtration system is needed, especially in the dirty lab. If this is a floor system, provide a duct cleanout.
- ☐ Provide exhaust systems at each welding station.
- ☐ An exhaust system is needed in the paint and finish areas.
- ☐ The broadcasting area may need additional air-conditioning.

Electrical:

- ☐ Electrical supply outlets need to be sufficient to meet the electrical equipment needs of the modern classroom.
- ☐ Electrical supply outlets need to be placed on each stationary wall and at the counters in each classroom.
- ☐ Electrical supply outlets need to be provided for any built-in audio-visual equipment installed in the classroom (e.g., television, VCR, electric ceiling screen, etc.) Controls for the screen should be by the light switches.
- ☐ Each classroom should have occupancy sensors installed for lights.
- ☐ The perimeter of the clean lab will need extra outlets both four-plex and duplex.
- ☐ Variable power needs to be provided in the clean lab.

- ☐ Drop down overhead power is needed in multiple locations of the clean lab, particularly at the center work tables.
- ☐ In the dirty lab, three-phase power is needed around the perimeter and hard wired to the stationary equipment.
- ☐ A master switch should be installed controlling all equipment.
- ☐ The welding booths will need 110 and 220 volt power.
- ☐ Electricity needs to be provided for an overhead door.
- ☐ Power needs to be provided to the dust collection system.
- ☐ Explosive proof switches are needed in the paint room.
- ☐ Electrical supply should be oversized to accommodate future growth.
- ☐ When planning lighting placement, consider computer screen glare.
- ☐ Electrical supplies should be oversized for future expansion.

Lighting:

- ☐ Lighting needs to be even across the classroom.
- ☐ The lighting controls need to accommodate an instructor's need to vary the light intensity for different instructional tasks.
- ☐ The light fixtures need to be energy efficient to keep operating costs at a minimum.
- ☐ The dirty lab will require 80-100 foot candles of light.
- ☐ Increased lighting is needed in the paint room.
- ☐ Security lights are needed in the outside storage area.
- ☐ Natural lighting should be provided wherever practical.
- ☐ The lighting needs to be higher than a normal classroom in the clean lab with no shadows.

- ☐ All lighting should have staged controls.
- ☐ Specialty lighting is needed in the broadcast room.

Technology:

- ☐ The clean lab should have 20 data drops for student computers around the perimeter of the lab. Two data drops should be provided for the instructor's computer. The instructor's data drops need to be placed in different spots in the room to allow the teacher's desk to be moved periodically.
- ☐ A data drop to the ceiling projector will be needed in the clean lab.
- ☐ Data drops are needed in each office.
- ☐ Data drops may be needed in the storage room and tool room.
- ☐ The dirty lab will need ceiling data drops to the work tables.
- ☐ Some fixed equipment may need data drops.
- ☐ Each classroom needs to have access to cable TV for commercial, satellite and closed circuit broadcasts over the cable.
- ☐ Phone jacks should be placed near the door to the classroom and near the teacher's area.
- ☐ The phone system should be programmed to enable outgoing calls directly from the classroom but incoming calls allowed only after going through the main office switchboard.
- ☐ Each classroom should be equipped with an integrated clock, intercom, and bell system.
- ☐ Each classroom should be equipped with a TV, VCR, electric screen and overhead/LCD projector.

- ☐ A Smart Board should be considered for the classroom.
- ☐ The area should be wired with data cable to enable the connection of a local area network and a wide area network.
- ☐ Oversized the conduit should be considered for future growth.

SURFACES

Floors:

- ☐ Vinyl composition tile should be installed in the clean lab and all areas other than the dirty lab.
- ☐ Sealed concrete is needed in the dirty lab.
- ☐ Zoned striping should be provided in the dirty lab and in the clean lab where appropriate.

Walls:

- ☐ A 4'x16' white board with friction clips needs to be provided.
- ☐ Wall and ceiling surface materials need to accommodate the acoustical needs of the classroom and the labs.
- ☐ In the labs, masonry with washable, brightly painted surfaces are needed.
- ☐ Consider high windows for some natural light if possible.
- ☐ Windows need to be of double pane glass and have operable integral blinds where practical.
- ☐ Interior windows between the office and the labs are necessary.
- ☐ If possible, place Interior windows between the two labs.
- ☐ All windows should have safety glass installed.

- ☐ Some movable walls may be appropriate in some of these spaces.
- ☐ Tackable wall space should be provided in the classroom and clean lab.
- ☐ Slanted windows should be installed in the broadcast room between the main video room and the control room for sound deflection.

Ceilings:

- ☐ The ceiling height of the dirty lab should be 12' - 14'. All other ceilings should be 9'-12'.
- ☐ The ceiling should be a durable suspended ceiling with acoustical tile.

Doors:

- ☐ Each general classroom should have a standard sized exit door.
- ☐ Each general classroom door should have a small narrow window.
- ☐ An electric overhead door should be installed in the dirty lab. A remote control door opener should be considered.
- ☐ Double doors should be installed between the labs.
- ☐ Double doors are needed to the paint room.

STORAGE

- ☐ Each clean lab needs to have base cabinets in the perimeter for 20 computer stations. Each station should have open knee space for two students.
- ☐ Each clean lab needs to have overhead wall cabinets above the base cabinets.

- ☐ Each clean lab needs to have sufficient storage for those specialized books, magazines, and other instructional materials necessary for successful instruction.
- ☐ Each clean lab needs to have some locking cabinets specifically for the personal effects of the instructors.
- ☐ Space is needed for two (2) four-drawer, letter-size file cabinets.
- ☐ The storage room should have adjustable shelving and floor to ceiling cabinets. Some of these cabinets need to be secure.
- ☐ Some of the cabinets in the storage room need to be designed to hold flammable hazardous materials.
- ☐ Some base and some overhead cabinets are needed in the office.
- ☐ Some of the cabinets in the office need to be secure and need to be floor to ceiling.
- ☐ Some of the office base cabinets need to have knee space for a computer desk.
- ☐ The dirty lab needs storage under the center work tables. This storage should be a combination of open shelving and some drawers.
- ☐ The dirty lab should also have storage under the perimeter work benches. This storage should be open shelving.
- ☐ Storage racks are needed for the metal, wood, and sheet goods.

FURNITURE AND EQUIPMENT

- ☐ Each clean lab needs to be equipped with a television, VCR, overhead/LCD projector, and electric ceiling mounted screen.

- ☐ The following is a list of equipment needed for both labs:

Wind tunnel

CNC machines

Laser cutter

Drill press

Routers

Radial arm saw

Table saw

Miter saw

Band saw

Planers

Sanders

Joiners

Thickness plane for sander

Lathes

Buffers

Computers and peripherals

Scales

Video Equipment

Air Compressor

Microwave equipment

Telecommunications

Plotters

Generators

Welders

Injector molders

Computers and peripherals

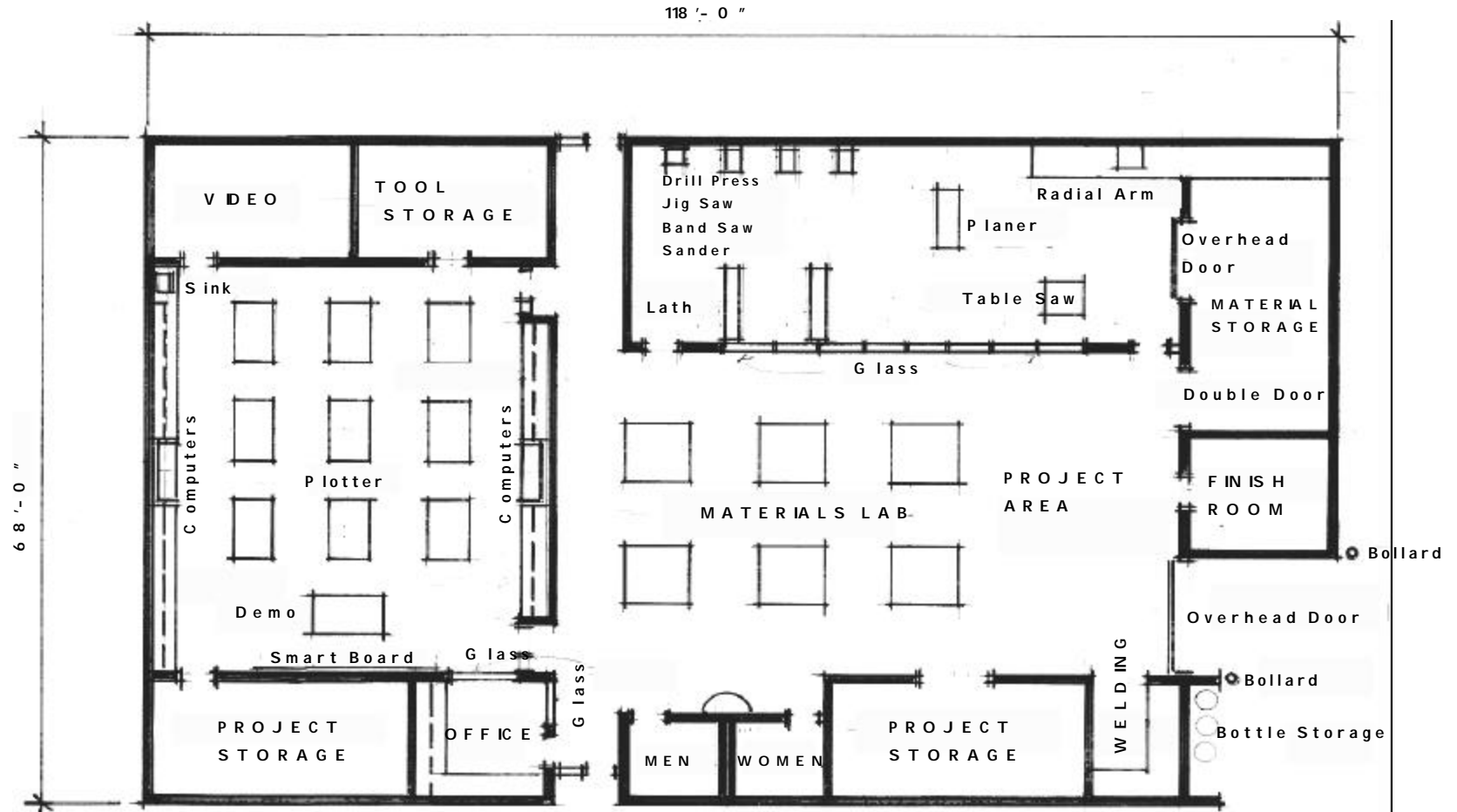
SAFETY ISSUES

- ☐ Safety striping is needed on the lab floors.
- ☐ The correct storage for hazardous materials should be provided.
- ☐ A first aid kit should be provided in the lab.
- ☐ All furniture should be ergonomically correct.

IMPORTANT NOTE

The following graphics are intended to show typical spaces and spacial relationships. They are not intended to serve as architectural drawings and are not adapted to specific sites.

,These graphics should be used as a starting place for discussions with district personnel, planners, architects and engineers. Almost certainly, changes and adaptations will be required to meet the particular needs of the educational institution and the programs they offer.



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The Matrix Group

Not to Scale